

SHORT COMMUNICATIONS

Suitability of polarising film for photometers.

K. D. MIELENZ (Fuess, Berlin) and R. Clark Jones (Polaroid Corporation) have discussed the errors expected from path-difference in polarizing film (Optik, 1958, vol. 15, p. 656): 'cos δ_2 . . . ist . . . eine Größe die . . . durchaus verschieden sein wird, . . . eine Größe also, die auch bei bekanntem R von vornherein die zu erwartende Meß-charakteristik und Meßgenauigkeit des cos⁴-Photometers ganz ungewiß läßt. Von dieser Unbestimmtheit ist das cos²-Photometer frei, und hierin liegt ein weiterer wesentlicher Vorteil dieser einfacheren Anordnung.' A variety of 'polaroid' is described in which the pleochroic layer is overlaid with a parallel birefringent plastic.

Such a parallel sheet will not disturb the Law of Malus if the polarization is perfect. It would appear that the errors feared by these authors could only arise for an imperfect polarizing film. For a good film the ratio $I_{\perp}/I_{\parallel}$ is less than, say, 0.0001, for which the maximum rotation (due to a half-wave coating) would be 0.01 degree. This is negligible, and it seems unlikely that any manufacturer will employ inferior film. The Cooke cos⁴ microphotometer (Manual of the polarizing microscope, 2nd edn, York, 1953, p. 131 [M.A. 12-233]) has been subjected to a wide range of tests (A. F. Hallimond, Min. Mag., 1957, vol. 31, p. 487, in which details of manipulation are given); no trouble of this kind was encountered. There are quite different considerations which determine the preference for photometers of the cos⁴ type; these have even been constructed with birefringent calcite prisms (L. Capdecombe and J. Orcel, Rev. Optique, 1941, vol. 20, p. 88; cf. J. H. Dowell, Journ. Sci. Instr., 1931, vol. 8, p. 382).

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